



Site Inspection Report

Van Waters and Rogers, Inc.

Boise, Idaho

EPA REGION X

Contract No. 68-W9-0046
Work Assignment No. 46-23-0JZZ
Work Order No. 4000-019-026-4100
Document Control No. 4000-019-026-AAAA

July 1995



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**SITE INSPECTION REPORT
VAN WATERS AND ROGERS
BOISE, IDAHO**

Prepared for

**U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, Washington 98101**

Contract No. 68-W9-0046
Work Assignment No. 46-23-0JZZ
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Prepared by

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ARCS QUALITY ASSURANCE CONCURRENCE

SITE INSPECTION REPORT

Van Waters and Rogers, Inc.

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Project Name: Site Inspection Report
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Responsible Organization: Roy F. Weston, Inc.
700 Fifth Avenue, Suite 5700
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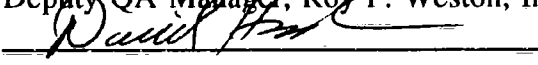
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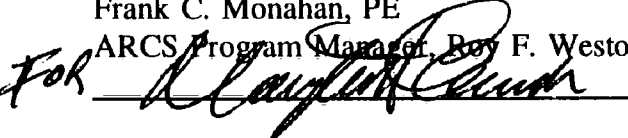
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Date: 31 JUL 95

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Signature: For 

Date: 31 JULY 95

**Site Inspection Report
Van Waters and Rogers, Inc.
Boise, Idaho
SITE ID No. IDD984670067**

Site Name/Address

Van Waters and Rogers (inactive)
Pier 1 Imports (current location) at Boise Towne Square Mall
140 N. Milwaukee St.
Boise, Idaho 83788

County: Ada
Located within the Boise Towne Square
Section 12, Township 3N, Range 1 E

Latitude: 43°36'22"N Longitude: 116°16'36"W

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SECTION 1

INTRODUCTION

Pursuant to United States Environmental Protection Agency (EPA) Contract No. 68-W9-0046, Roy F. Weston, Inc. (WESTON®) conducted a nonsampling site inspection (SI) of the Van Waters and Rogers, Inc., site located in Boise, Idaho. This SI was conducted under the authority of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). The SI process is intended to document a threat or potential threat to public health or the environment as posed by a site, to identify whether a potential emergency situation exists that may require an immediate response, to document the presence or absence of uncontained or uncontrolled hazardous substances on a site, and to confirm site characteristics and area receptor information collected during the preliminary assessment (PA). In addition, the SI process is intended to collect sufficient data to enable evaluation of the site's potential for inclusion on the National Priorities List (NPL) and, for those sites determined to be NPL candidates, establish priorities for additional action. The SI process does not include extensive or complete site characterization, contaminant fate determination, or quantitative risk assessment. This SI was conducted without project-specific sampling.

A PA, the first step in the CERCLA/SARA process, was conducted in 1993 to review existing information on the site and its environs to assess the threat, if any, posed by the site to public health, welfare, or the environment and to determine if further investigation (an SI) under CERCLA/SARA was warranted. After reviewing the PA, EPA decided that further investigation of Van Waters and Rogers, Inc., using EPA's Revised Hazard Ranking System (HRS) criteria would be necessary to more completely evaluate the site (EPA, 1992). The HRS assesses the relative threat associated with the actual or potential releases of hazardous substances at a site.

This document presents a summary of the objectives, activities, and results of the Van Waters and Rogers nonsampling SI. Included are descriptions of site background information (Section 2), regulatory involvement (Section 3), summary of pathway considerations (Section 4), and conclusions (Section 5).

SECTION 2

BACKGROUND

2.1 OWNERSHIP

Van Waters and Rogers, Inc. (VWR), a subsidiary of Univar Corporation, leased space in a warehouse at 7721 Friedly Drive from 1973 to 1983 (Gaudette, 1995). The property was owned by Nielsen Transfer and Storage Company until April 1987 when it was sold to the Boise Mall Development Company. In February 1989, ownership of the property was transferred to Pier 1 Imports, Inc. (Pier 1) (IDHW, 1992a).

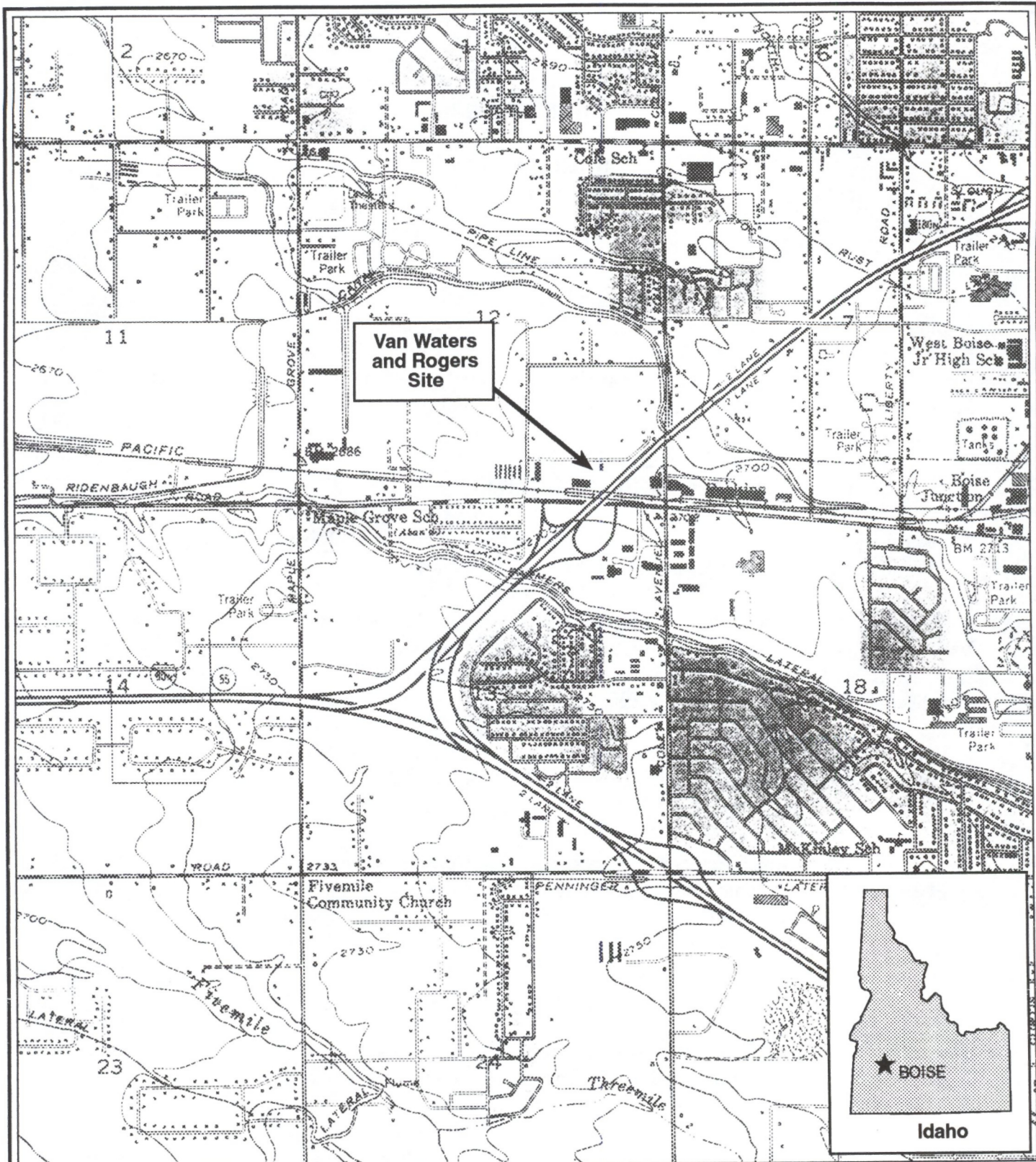
2.2 SITE LOCATION AND DESCRIPTION

The site location is in the Boise Towne Square Mall in southwest Boise, Idaho in Ada County at latitude 43°36'22"N and longitude 116°16'36"W (Figure 2-1).

For the purposes of this report, the term "site" is used to describe the former location of VWR's chemical distribution facility, as well as soil that became contaminated as a result of spills from an aboveground storage tank. A portion of the asphalt parking lot for the mall and the Pier 1 store currently cover the site. VWR, when in operation, was technically located on Friedly Drive, which was covered over during the construction of the Pier 1 store and Boise Towne Square Mall. A former aboveground perchloroethylene tank used by VWR was previously located east of the Pier 1 store (see Figure 2-2). The site overlies a groundwater contamination plume, which extends past site boundaries.

The primary contaminant detected in the groundwater plume is perchloroethylene (also known as PCE, perc, and tetrachloroethene). Based on groundwater investigations both upgradient and downgradient of the site, the plume of PCE is roughly 0.5 mile wide and extends to the northwest (downgradient of the site) for approximately 2.5 miles. A mixture of rural and suburban lots overlies the projected plume. The portion of the plume containing PCE above federal drinking water standards is defined as the Affected Area (see Figure 2-3).

The site is situated in a mixed commercial and residential area with the main buildings of the Boise Towne Square Mall located approximately 550 feet to the north, a residence located roughly 2,000 feet northwest, the Union Pacific Railroad to the south, and a movie theater and several small businesses to the west. Interstate Highway 184 borders the site on the east. Aside from small landscaping islands, the entire lot of the Boise Towne Square Mall is paved with asphalt.



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Scale in Feet

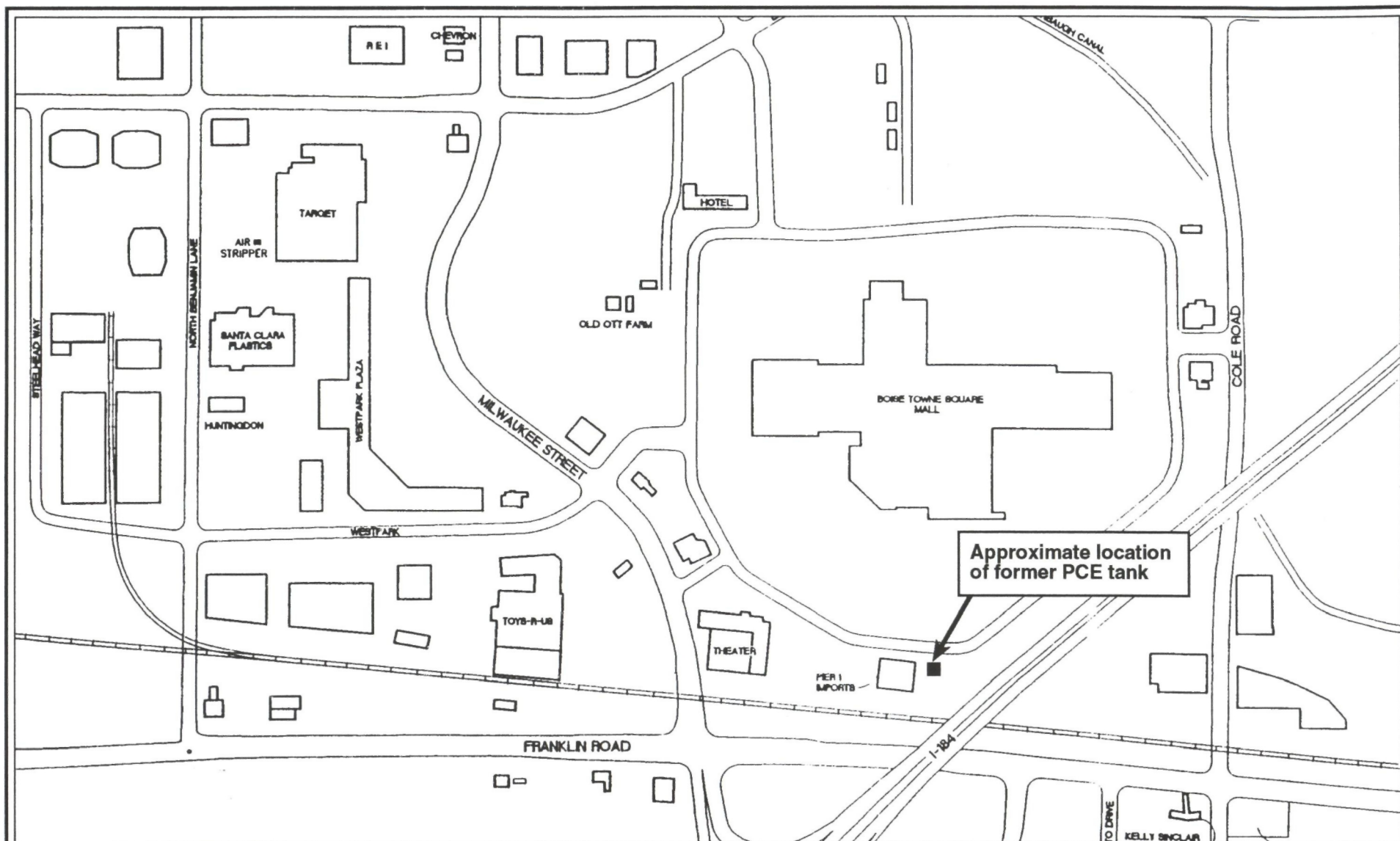
Source: USGS 7 1/2'
Quadrangle Series -
Cloverdale, Idaho(1953,PR 79)

Van Waters and Rogers, Inc. Vicinity Map Boise, Idaho

WESTON
MANAGERS DESIGNERS/CONSULTANTS

4000-19-26-4100
May 1995

FIGURE
2-1



0 250 500

Scale in Feet

Source: Century West
Engineering Corp., 1995

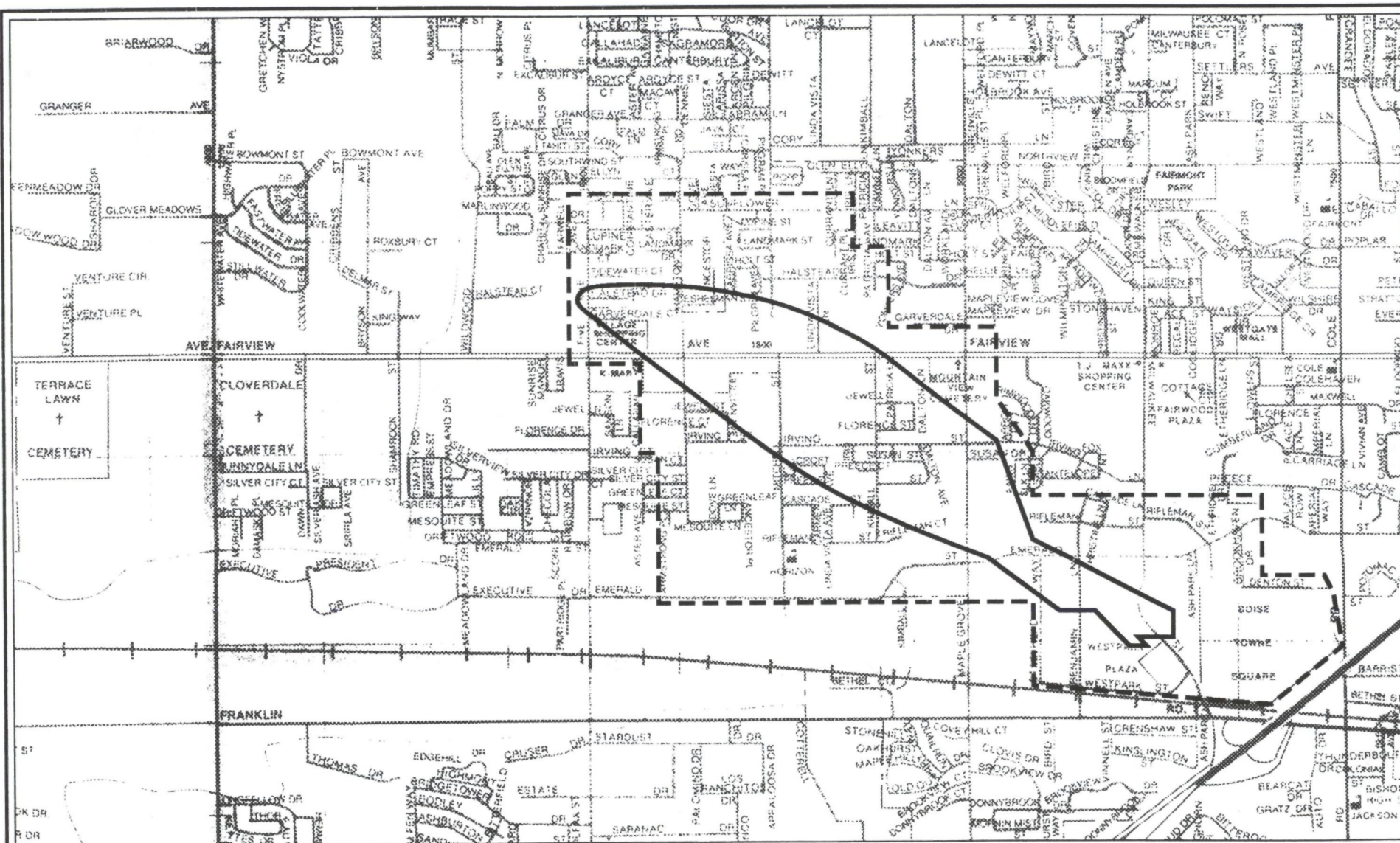
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4000-19-26-4100
May 1995

Van Waters and Rogers, Inc.
Former PCE Tank Location
Boise, Idaho

FIGURE

2-2



0 1000 2000
Scale in Feet

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4000-19-26-4100
June 1995

EXPLANATION

- Affected Area
- - - Preliminary Study Area

Source: HLA, 1995

Van Waters and Rogers, Inc.
Preliminary Study and Affected Areas
Boise, Idaho

FIGURE
2-3

The Ridenbaugh Canal, which generally flows east to west, circumvents the site in a wide arc to the north. Catch basins located within the parking lot of the Boise Towne Square Mall divert stormwater runoff northwest into the Ridenbaugh Canal. The Finch Drain (formerly called the South Slough), an irrigation canal flowing to the northwest, intersects the Ridenbaugh Canal at a point 0.85 mile northwest of the site.

The Boise area is characterized by relatively hot summers and cold winters. Average annual precipitation based on the years 1951 through 1990 is 12.11 inches (NWS, 1995). Net precipitation in the vicinity of the site averages 3 inches per year. The 2-year, 24-hour rainfall averages 1.5 inches (PRC, 1993b).

2.3 SITE HISTORY

2.3.1 Summary of Historical Site Uses

The site is the former location of a warehouse, a portion of which VWR leased in order to operate its chemical distribution facility. During its operation, VWR reportedly used a 6,000-gallon aboveground storage tank for temporary storage of PCE. PCE and other chemicals were reportedly transferred to the VWR facility by rail. The tank was located outside and east of the warehouse. Based on the detections of organics in the soil near the tank, it is assumed that spillage of PCE occurred from the tank during VWR's lease (Gaudette, 1995).

The Nielson Transfer and Storage Company (Nielson) occupied the unleased portion of its warehouse until 1981, when Nielson was purchased by Air Van North American (AVNA). While Nielson maintained ownership of the property, AVNA used the other portion of the warehouse not leased by VWR, to store household goods. In 1987 the property was sold to the Boise Mall Development the Company (PRC, 1993b). The warehouse was demolished around 1987 or 1988. The shopping center, which includes the mall and the Pier 1 store, was subsequently built over the area. No records are available on the date of the tank removal; based on aerial photographs, the aboveground tank was removed sometime prior to 1990 (PRC, 1993a). The location of the tank was covered by the asphalt parking lot of the shopping center. The Pier 1 store was built over the location of the former warehouse.

2.3.2 Summary of Previous Actions and Investigations

PCE and its associated degradation compounds (e.g., cis- and trans-dichloroethane, trichloroethene, and vinyl chloride) were first detected in 1987 in groundwater samples collected off-site at the Westpark Mall, located downgradient of the site. Since this discovery, numerous investigations have been performed, some of which have been required by consent orders with the Idaho Department of Health and Welfare (IDHW), Division of Environmental Quality (IDEQ). These activities are summarized in Table 2-1. For ease of discussion, this summary focuses on PCE as the primary contaminant, although the PCE-

degradation chemicals may have also been detected. Detailed descriptions of these investigations are presented in *Van Waters and Rogers, Inc., Boise, Idaho (IDD984670067) Preliminary Assessment - Final Report (PRC, 1993b)*.

2.4 SUMMARY OF EXISTING SITE CONDITIONS

To date, numerous activities have been performed in response to three consent orders signed by VWR and IDEQ. These are discussed in Section 3 following descriptions of each consent order.

The site characteristics are almost identical to those described earlier during the PA: the soil is covered with the Pier 1 store and the asphalt parking lot.

The soil vapor extraction (SVE) unit is currently in operation. It is used to recover volatile organic compounds (VOCs) primarily from soil in the shallow subsurface, as well as from some groundwater. The VOCs are extracted from the soil through a series of horizontal perforated PVC piping placed in trenches approximately 7 feet below ground surface (bgs). A vacuum is placed on the system to facilitate the extraction process and route the soil gas from the horizontal pipes into a vapor recovery system. Activated carbon is used in the vapor recovery system to minimize VOC emissions to the atmosphere.

Efforts are currently underway by VWR to develop two groundwater extraction and treatment systems: one at the site and another at the Preliminary Study Area (PSA) as defined by IDEQ. One groundwater extraction well has been installed near the soil vapor extraction unit at the site but is not yet in operation (see Section 3.1.3.3). To date, one extraction well has been installed within the PSA.

A total of 125 wells were identified by VWR to be located within the PSA. Of these wells, 82 private and commercial wells were determined to be used for potable applications (HLA, 1995a). VWR has provided alternate water supplies to all but five of the respective owners. The impacted wells that were used as drinking water supplies have not been decommissioned.

Table 2-1—Summary of Previous Actions and Investigations

Date	Action	Description	Reference
1987	PCE first discovered at Westpark Mall shopping center downgradient of site.	PCE detected in groundwater at concentrations from 1,000 to 2,500 µg/L during an environmental assessment of Westpark Mall commercial development project (northwest and downgradient of site).	Special Resource Management, Inc. (SRM). 1987. Environmental Assessment for the Proposed Westpark Commercial Center, Boise, Idaho. Prepared for Pacific Rim Development Corporation. 6 November 1987.
July 1988	PCE detected in private wells downgradient of site.	IDEQ samples and finds PCE in private wells downgradient of VWR site.	Harding Lawson Associates (HLA). 1995a. Phase I Site Investigation Report. Preliminary Study Area. Boise, Idaho. Prepared for Van Waters and Rogers, Inc., Kirkland, WA. Prepared by Harding Lawson Associates, Novato, CA. 7 March 1995.
January 1989	Westpark Mall property owners are required to clean up groundwater.	IDEQ and Westpark Partnership (of Westpark Mall) enter into a consent order (the "Westpark Order"), which requires the reduction of PCE in groundwater to 10 µg/L or less.	Idaho Department of Health and Welfare (IDHW). 1989. Westpark Partnership Consent Order. Idaho Code Section 39-108. 16 January 1989.
April 1989	PCE detected in soil at site and in additional private wells downgradient of site.	IDEQ collects soil samples from site during construction of Pier 1 Imports store. PCE detected in a surface soil sample at 62 µg/kg. PCE also detected in private wells sampled downgradient of site.	GZA GeoEnvironmental, Inc. 1991. Environmental Site Evaluation, Boise Towne Square, Boise Idaho. August 1991.
June 1989	PCE compounds found in subsurface soil at site.	VWR drills 3 soil borings near former location of aboveground storage tank. Various levels of PCE were detected, with higher concentrations occurring near the former PCE tank location.	Vokey, Scott R. 1992. Preston, Thorgrimson, Shidler, Gates, and Ellis. Letter to Douglas Conde, Idaho Division of Environmental Quality. 28 March 1992.
March 1990	Westpark Mall property owners begin pumping and treating groundwater at the mall.	Westpark Partnership installs a groundwater extraction and treatment system at the Westpark Mall in response to the Westpark consent order. Treated water is discharged to Ridenbaugh Canal.	PRC Environmental Management, Inc. 1993b. Van Waters and Rogers, Inc., Boise, Idaho (IDD984670067) Preliminary Assessment - Final Report. Prepared for U.S. Environmental Protection Agency, Office of Waste Programs Enforcement, Washington, D.C. 1 December 1993.

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Table 2-1—Summary of Previous Actions and Investigations

Date	Action	Description	Reference
May 1990	Additional downgradient wells, including a public water supply well, are identified as having concentrations of PCE.	IDEQ collects drinking water samples from homes near Maple Grove and Fairview roads. PCE and PCE-breakdown products are detected. PCE is detected at 134 µg/L in Syringa Mobile Park public water supply, which served approximately 110 individuals.	PRC Environmental Management, Inc. 1993b. Van Waters and Rogers, Inc., Boise, Idaho (IDD984670067) Preliminary Assessment - Final Report. Prepared for U.S. Environmental Protection Agency, Office of Waste Programs Enforcement, Washington, D.C. 1 December 1993.
January 1991	EPA creates drinking water standard for PCE.	EPA finalizes the Safe Drinking Water Act MCL for PCE at 5 µg/L, which was effective July 1992.	U.S. Federal Register 3526. 30 January 1991.
August 1991	Groundwater contamination detected at Boise Towne Square Mall (site location).	GZA GeoEnvironmental, Inc. (GZA) completes an environmental assessment of the main mall building, parking areas, detention pond, and three roadways associated with the Boise Towne Square Mall. The report includes data from eight monitoring wells (6 installed by GZA) around the mall, which indicate the presence of PCE in groundwater from 56 to 2,500 µg/L.	GZA GeoEnvironmental, Inc. 1991. Environmental Site Evaluation, Boise Towne Square, Boise Idaho. August 1991.
September 1991	Soil gas survey at site reveals PCE and degradation compounds in the soil beneath the site.	VWR contracts HLA to conduct a soil gas survey at the site from 5 to 11 feet bgs. PCE is detected in 25 of 34 samples from 0.11 to 5,500 µg/L.	Harding Lawson Associates (HLA). 1991. Soil Gas and Groundwater Investigation, Former VWR Facility, Boise, Idaho. 25 October 1991.
January 1992	VWR is required to provide alternate water supplies to persons with impacted wells, and to further identify the entire area impacted by the groundwater contamination.	IDEQ and VWR enter into a consent order (the "Water Supply Order") which requires VWR to prepare a plan and provide an alternative water supply to the populations with affected wells. The order defines the "preliminary affected area" based on wells that had already been found to have PCE contamination. The order requires VWR to further define the Affected Area.	Idaho Department of Health and Welfare (IDHW). 1992b. Van Waters and Rogers, Inc. Consent Order. Idaho Code Sections 39-108 and 39-4413. 3 January 1992.

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Table 2-1—Summary of Previous Actions and Investigations

Date	Action	Description	Reference
February 1992	To minimize the spread of PCE, VWR begins testing a treatment unit that reduces VOCs in the subsurface.	VWR installs a pilot SVE system in the area of the former tank to limit contaminant migration.	Harding Lawson Associates (HLA). 1995c. Final Site Investigation Report/Remedial Action Plan. Boise Towne Square Mall. Boise, Idaho. Prepared for Van Waters and Rogers, Inc., Kirkland, WA. Prepared by Harding Lawson Associates, Novato, CA. 27 January 1995c.
June 1992	EPA and IDEQ agree on process to investigate VWR site.	The two agencies agree to investigate the site using a process that minimizes the duplication of efforts. The need for a PA is established.	Idaho Department of Environmental Quality (IDEQ) and U.S. Environmental Protection Agency (EPA). 1992. Agreement Between IDEQ and EPA Listing of Site Number IDD984670067 on CERCLIS. 1-5 June 1992.
June 1992	Site is included in CERCLIS database for investigation under the EPA Superfund program.	EPA Superfund office representatives inspect site and subsequently complete a Potential Hazardous Waste Site Identification form, recommending an investigation be performed under CERCLA.	U.S. Environmental Protection Agency (EPA). 1992. Potential Hazardous Waste Site Identification form for Van Waters and Rogers (Parcel 8512270110). Deborah Flood, US EPA. 11 June 1992.
September 1992	VWR is required to investigate and propose short- and long-term cleanup remedies for the contaminated groundwater downgradient of the site.	IDEQ and VWR sign a consent order for the investigation, implementation of interim remedial measures, and evaluation of the need for and selection of remedial activities within the PSA (otherwise known as the "PSA Order").	Idaho Department of Health and Welfare (IDHW). 1992a. Preliminary Study Area Consent Order. Idaho Code Section 39-4413 and 39-108. 9 October 1992.
October 1992	VWR is required to investigate and propose a cleanup remedy for the site, including the mall.	VWR and IDEQ sign a consent order (the "Boise Mall Order") for an investigation and remediation at the Boise Towne Square Mall, which includes the VWR site.	Idaho Department of Health and Welfare (IDHW). 1992c. Boise Mall Consent Order. Idaho Code Section 39-4413 and 39-108. 9 October 1992.
March - April 1993	Site monitoring wells installed.	VWR contracts HLA to install and sample two monitoring wells at the Boise Towne Square Mall. PCE is detected primarily within the uppermost 70 feet of groundwater.	Harding Lawson Associates (HLA). 1993. Risk Assessment Work Plan. Preliminary Study Area. Boise, Idaho. Prepared for Van Waters and Rogers, Inc. 28 December 1995.

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Table 2-1—Summary of Previous Actions and Investigations

Date	Action	Description	Reference
July 1993	PCE contamination detected in Finch Drain.	VWR samples surface water from Finch Drain and Ridenbaugh Canal. PCE is detected in Finch Drain from 0.6 to 4.8 µg/L but not in the canal. The highest concentration, detected at the intersection of the two canals, was attributed to contaminated groundwater seepage and discharges of Westpark's treated effluent.	Harding Lawson Associates (HLA). 1993. Risk Assessment Work Plan. Preliminary Study Area. Boise, Idaho. Prepared for Van Waters and Rogers, Inc. 28 December 1995.
December 1993	Preliminary Assessment Report.	A PA of the VWR site is completed for the EPA Region X Superfund Office. Based upon the findings of the PA, further investigation under CERCLA is recommended.	PRC Environmental Management, Inc. 1993a. Record of telephone conversation between Crystal Bailey and Don Stillwaugh, Air Van North American, regarding use of warehouse by Air Van North American. 30 November 1993.
January 1995	Boise Town Square Site Investigation/Remedial Action Plan.	A site investigation is completed in accordance with the Boise Mall Order, and includes results of soil gas, soil boring, groundwater, and geophysical studies. The Remedial Action Plan is completed, which identifies and screens potential remedial actions to address the contamination at the mall.	Harding Lawson Associates (HLA). 1995c. Final Site Investigation Report/Remedial Action Plan. Boise Towne Square Mall. Boise, Idaho. Prepared for Van Waters and Rogers, Inc., Kirkland, WA. Prepared by Harding Lawson Associates, Novato, CA. 27 January 1995c.
March 1995	PSA Phase I Site Investigation.	Investigation of the PSA is completed, and includes a determination of the nature and extent of groundwater and surface water in the PSA. The data are used to identify locations of contaminated wells, including those used to define the Affected Area in which PCE concentrations are above the MCL.	Harding Lawson Associates (HLA). 1995a. Phase I Site Investigation Report. Preliminary Study Area. Boise, Idaho. Prepared for Van Waters and Rogers, Inc., Kirkland, WA. Prepared by Harding Lawson Associates, Novato, CA. 7 March 1995.

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SECTION 3

REGULATORY HISTORY

3.1 REGULATORY HISTORY OF VWR SITE

3.1.1 EPA—IDEQ Agreement

IDEQ and the EPA Region X Superfund Office signed an agreement on 5 June 1992 that outlined the process to be used to investigate and clean up the VWR site. The two agencies agreed to minimize the duplication of efforts and expedite site cleanup. The agreement called for a PA, and, if necessary, an SI in order to determine if further consideration for placement on the National Priorities List was warranted (IDEQ and EPA, 1992).

3.1.2 Site Listing

Based upon findings of PCE in downgradient wells, the EPA Superfund Response Investigations Section visited the site on 11 June 1992 and subsequently completed a Potential Hazardous Waste Site Identification form.

3.1.3 Consent Orders Involving VWR

Since 1990, efforts have been underway by VWR in response to consent orders signed with IDEQ regarding the PCE contamination of soil and groundwater at and near the site. Although the consent orders and response actions are discussed sequentially, some of the response actions may have been performed by VWR in a manner that fulfilled the requirements of more than one consent order at a time.

According to IDEQ, VWR has been responsive in meeting the requirements under each order; missed deadlines have been attributed to logistical constraints outside VWR's control (Howarth, 1995).

3.1.3.1 Water Supply Order

A consent order referred to as the Water Supply Order was signed by IDEQ and VWR in 1992 as a result of a 1990 IDEQ investigation which revealed a number of contaminated wells downgradient of the site. This area was described as the Preliminary Affected Area. In the Water Supply Order, IDEQ acknowledged the potential for other sources to be contributing to the groundwater contamination. The principal requirements of this consent order are described below, followed by descriptions of the responses performed by VWR. The goals of the Water Supply Order were near completion by March 1995, according to IDEQ.

Identify wells and the associated residences or businesses impacted by PCE and/or its breakdown compounds. Presently, a total of 125 wells are identified by VWR to be located within the Preliminary Affected Area (HLA, 1995a). Groundwater data, in concert with a 1992 well survey prepared by IDEQ, were used to identify these wells. Of these wells, 82 residential and commercial wells were determined to be used for potable applications.

Identify an Affected Area which defines the general locations of wells having PCE concentrations above the Maximum Contaminant Level (MCL). Forty-two private and commercial wells have been identified within the Affected Area (Beekman, 1995). Fourteen wells in the Affected Area have been sampled. Ten wells were confirmed to have PCE concentrations above the MCL of 5 µg/L. Two of the wells found to have PCE concentrations below the MCL are deep wells. The remaining unsampled wells are suspected of having concentrations above the MCL, due to their location in the Affected Area. (Beekman, 1995).

Provide public water supply connections to individuals with affected wells. With the exception of five parties, VWR has provided connections to city water to all the affected individuals (HLA, 1995a). Of the remaining people, some individuals have not responded to VWR's proposals, while others have refused VWR's offer for city water connections. With each connection, VWR is also required to reimburse each well owner for one year of water utility costs. (HLA, 1994).

Periodically resample the wells with PCE above analytical detection limits but below MCLs. In addition to wells within the Affected Area, VWR has also identified and periodically monitored approximately ten indicator wells that contain PCE at concentrations above the analytical detection limit (0.2 µg/L) but below MCLs (Beekman, 1995). February 1995 monitoring results indicate PCE concentrations at a minimum of 1.3 µg/L in these wells (HLA, 1995b). The wells are located along the periphery of the Affected Area.

Reduce the potential for cross-connections between aquifers. VWR has recently initiated a deep well study to identify any possible connections between the shallow and deep aquifers (Gaudette, 1995). As discussed above for the Affected Area, two deep wells have already been identified within the Affected Area. PCE concentrations in these wells were found to be below MCLs. The depths of at least 19 wells within the Affected Area are unknown (HLA, 1995a).

3.1.3.2 PSA Order

Another consent order, referred to as the PSA Order, was signed by VWR and IDEQ on September 1992 regarding the area defined by IDEQ as the PSA. The PSA generally corresponded to the preliminary affected area discussed for the Water Supply Order, but was expected to be modified based on additional efforts by VWR. The principal requirements of

this consent order are described below and followed by descriptions of the responses performed by VWR.

Investigate the nature and extent of contamination within the PSA, and identify potential sources. VWR has summarized the results of its investigation in a 1995 Site Investigation Report (HLA, 1995a). The report includes a summary of the nature and extent of contamination with respect to soil, groundwater, surface water, and air. The characteristics of the geology and hydrogeology of the PSA were also investigated and discussed.

Conduct a Phase II Investigation to resolve data gaps. During the investigation, VWR identified an area within the Affected Area near Maple Grove Road and Susan Drive at which PCE concentrations have been consistently higher (e.g., at around 390 µg/L) than concentrations in surrounding areas. VWR has recently obtained state approval of the "Phase II" investigation, which will focus on this area. To date, it is not known if the higher concentrations are due to the presence of another source or if they are attributed to hydrogeologic characteristics that influence the migration pattern of PCE from the site. By May 1995, VWR had identified the appropriate property owners that need to be contacted for access approval (Gaudette, 1995).

Identify potential human health and environmental receptors. The risk assessment for the PSA is scheduled to be performed after the Phase II investigative activities are complete (Gaudette, 1995). The framework for the risk assessment is described in the Risk Assessment Work Plan (HLA, 1993). The risk assessment will include discussions of potential receptors, points of exposure, and estimated exposure concentrations for the areas within the PSA. Preliminary receptor data are provided in the existing SI report.

Evaluate the need for Interim Remedial Measures. VWR has identified the necessity for and obtained IDEQ approval on an Interim Remedial Measures (IRM) plan, which recommends hydraulic containment of the contamination. Hydraulic containment involves withdrawing groundwater from a system of extraction wells to create a "capture zone." This capture zone reverses groundwater flow in localized areas, essentially preventing the migration of contamination to downgradient areas. To date, one extraction well has been installed. Future efforts will include the installation of the other extraction well, installation of additional monitoring wells, obtaining a site to be used for the treatment of the extracted groundwater, construction of the treatment site, and startup testing to determine the optimum design parameters for the treatment system. Groundwater will be treated using carbon or resin filtration and then discharged under a permit with the state. According to IDEQ, a fourth consent order would be required to implement this plan.

Evaluate final remedial actions and develop a Remedial Action Plan. Development of this plan is expected following the risk assessment for the PSA.

3.1.3.3 Boise Mall Order

In October 1992, VWR signed a consent order with IDHW for a Boise Towne Square Mall investigation and remediation of the source area. The principal requirements of this consent order are described below, followed by descriptions of the responses performed by VWR.

Perform interim source control activities. A SVE system was installed at the source area prior to the consent order in February 1992. The SVE system had been temporarily shut down from May to September 1993 due to the need to find an alternate disposal facility for the spent carbon that is used to recover VOCs from the extracted vapors (PRC, 1993b). To date, a primary and secondary disposal facility have been secured to prevent a reoccurrence of this event (Gaudette, 1995). The SVE system was also shut down from January to mid-February 1995 due to broken drive belts and a faulty motor. The SVE is currently back in operation. To date, an estimated 1700 pounds of PCE have been removed from the subsurface. Results from soil samples collected at 5.5 bgs near the former tank location indicate a reduction of PCE from 26,000 mg/kg in 1991 to .088 mg/kg in 1994 (VWR, 1992; HLA, 1994). Based on the reduction of PCE, soil in the vadose zone is no longer considered to be a significant source of PCE (HLA, 1995c).

Assess the nature and extent of contamination with respect to the soil, groundwater, surface water, and air pathways. The final Mall Site Investigation Report/Remedial Action Plan (SI/RAP) was submitted to IDEQ in January 1995. Results of site characterization indicate that soil above the water table is no longer considered a major source of PCE, and, therefore will not require further remediation.

Evaluate the potential risks to human health and the environment at and immediately downgradient of the site. Results of the risk assessment were included in the SI/RAP, and indicated that, due to the lack of groundwater usage and the inaccessibility of the contaminated soil, air is the only major exposure pathway at the mall area. However, VWR continued soil vapor extraction efforts to minimize the risk associated with this pathway, as well as to mitigate the migration of contaminants from the source area (i.e., source control) (Gaudette, 1995).

Evaluate and implement, if necessary, remedial activities for the site. IDEQ has approved the Remedial Action Plan submitted by VWR for the source area. The actual treatment method will be determined during pilot tests, but will involve air stripping with vapor treatment by either activated carbon or resin. By March of 1995, the first extraction well had been drilled into the source area. PCE was detected in groundwater samples collected from this well at levels up to 20,400 µg/L at 40 feet bgs, with the minimum concentration of 24 µg/L detected at the end of the 95-foot bore hole (HLA, 1994). Data are still needed to answer system design questions regarding flow, the number of extraction wells required, and the chemistry of the influent. VWR will install a second extraction well and run aquifer tests this summer to obtain some of these data. The Well Installation and Aquifer Testing Plan has been approved

by the state. Once all design data are obtained, VWR will then prepare a remedial action implementation and monitoring plan (Gaudette, 1995).

A final asymptotic protocol developed by VWR was approved by IDEQ in January 1994. The asymptotic protocol was developed to statistically evaluate the chemical data for the groundwater beneath the mall. This will be used to determine if, over a period of time, concentrations of PCE remain constant, indicating that the levels of PCE are no longer being reduced. If this occurs, then VWR will need to review the existing extraction system to see if modifications are needed to improve performance, or if additional technologies should be considered (Gaudette, 1995).

3.2 ADJACENT SITES

In January 1989, IDEQ and Westpark Partnership entered into a consent order (the Westpark Order). Walla Walla Shopping Center Associates (a California limited partnership) assumed the obligations of Westpark Partnership on 15 February 1989.

The Westpark Order was written to address groundwater contamination at the Westpark Mall northwest of the site. Subsequent investigations have revealed the Westpark Mall area to be within the Affected Area.

Under the Westpark Order, the concentration of PCE contamination in the groundwater below the site is to be reduced to less than or equal to 10 µg/L. After IDEQ approval, a groundwater extraction and treatment system was implemented in March 1990. Since that time, extracted groundwater has been treated through an air stripper and subsequently discharged into Finch Drain in accordance with a permit issued by the state. To date, PCE concentrations in extracted groundwater have ranged from 3.0 to 1030 µg/L (Century West, 1995).

SECTION 4

SUMMARY OF PATHWAY CONSIDERATIONS

4.1 WASTE TYPE AND CHARACTERISTICS

The original contaminant source, a 6,000-gallon aboveground PCE tank, was removed from the site at least 3 years prior to the 1993. Contaminated soil in the vicinity of the former tank location remains at the site. Based upon subsurface soil data collected by VWR, the source covers an area of roughly 450,000 square feet and extends to at least 14 feet bgs (PRC, 1993b). This results in an estimated 233,300 cubic yards of contaminated soil. The depth corresponds to the deepest soil boring at the site, which is approximately the depth to the shallow aquifer. Based on results of soil boring data, PCE levels in the vadose zone soil have been substantially reduced by the SVE system.

Direct exposure to the soil is unlikely due to the presence of the asphalt parking lot. The soil presently serves as a source of PCE for the contaminated groundwater plume.

As discussed in Section 3, VWR plans to investigate an area within the Affected Area at which relatively high concentrations of PCE have been detected. To date, it is uncertain as to whether the concentrations are the result of another source or of hydrogeologic conditions related to the way in which the PCE is migrating from the site. Until further information is available, contaminated soil at the VWR site is assumed to be the only source.

4.2 PATHWAYS OF CONCERN

4.2.1 Groundwater Pathway

4.2.1.1 *Geology/Hydrogeology*

The regional hydrogeology features a shallow aquifer comprised of unconsolidated sand, silt, and gravel from the Pleistocene Age, overlying a deep aquifer identified as the Glenns Ferry Formation. The water table beneath the site occurs 10 to 15 feet bgs, during the irrigation season, and 15 to 20 feet bgs during the non-irrigation season. The regional shallow aquifer thickness ranges from 50 to 150 feet bgs. The deep aquifer, referred to as the Glenns Ferry Formation, occurs beneath the shallow aquifer. The deep aquifer is comprised of interbedded silt, clay, sand, fine gravel and basalt to a thickness of up to 2,000 feet.

The gradient for the shallow aquifer is generally to the northwest, with some localized variations due to irrigation activities. In the future, local gradients within the PSA and the

source area will be impacted by the operation of groundwater extraction systems to be placed at the site and in the PSA.

The deep aquifer serves as the primary drinking water source for the citizens of Boise. The shallow aquifer assumed to be the source of water for the majority of private wells downgradient of the site.

Based on well logs for the area, a discontinuous aquitard may be present; therefore, a hydraulic connection may exist in certain areas between the shallow and deep aquifers.

4.2.1.2 Wells Subject to Actual Contamination

According to EPA guidance, drinking water wells that are proven by analytical data to have site contaminants above any naturally occurring levels are subject to actual contamination. Because PCE is not naturally occurring, detections of this contaminant in any drinking water well would meet the conditions for actual contamination.

Instances of actual contamination have been documented for one public water supply well and at least 14 private wells within the Affected Area. More wells subject to actual contamination are anticipated for the site. For reasons of confidentiality, insufficient data were available to calculate the total number of private wells subject to actual contamination.

The former public water supply well at the Syringa Mobile Park was found to contain 134 µg/L PCE (HLA, 1995a). According to IDEQ investigations, this well is 200 feet deep. The estimated population associated with the former well was 110 at the time the contamination was discovered.

Fourteen wells within the Affected Area were sampled for PCE. Ten of the wells were found to have PCE at concentrations above the MCL. Two of the four remaining wells with PCE below the MCL were screened partially or fully in the deep aquifer (Beekman, 1995).

Additional deep wells may be identified within the PSA or Affected Area as VWR's deep well study continues.

4.2.1.3 Targets

Municipal Wells

Several blended municipal well systems are located at least partially within 4 miles of the site. These include the United Water Corporation (formerly the Boise Water Corporation), Capital Securities, Garden City Water and Sewer, South County Water Company, and Western Idaho Fairgrounds wells. Approximately 73 municipal wells are identified by the

EPA Geographic Information System (GIS) database within a 4-mile radius of the site (see Table 4-1). All of the municipal wells are assumed to withdraw water from the deep aquifer.

The closest municipal system is part of the United Water Corporation system, comprised of water blended from roughly 62 wells (39 of which are within 4 miles from the site). The nearest upgradient municipal well is approximately 0.25 mile east of the site. The nearest downgradient well, referred to as the Bali Hai well, is approximately 2.5 miles northwest of the site. The Bali Hai well is screened in the deep aquifer at approximately 500 feet bgs, and is located approximately 1,000 feet downgradient of the PCE plume.

The Bali Hai well is monitored on a regular basis for conformance with federal drinking water standards. Recent monitoring results from the fall of 1994 indicate that no MCLs have been exceeded (see Appendix A, Bali Hai Well Monitoring Reports). According to IDEQ, no municipal wells have been impacted by site contamination (Howarth, 1995).

A shallow monitoring well was installed by VWR between the Bali Hai municipal well and the edge of the PSA in February 1994. Results of samples collected by VWR indicate levels of PCE at 0.3 µg/L in shallow groundwater at this area (HLA, 1995b). Water level readings for 1994 indicate the shallow aquifer is significantly influenced by irrigation activities, but does not appear to be influenced by pumping activities at the Bali Hai well (HLA, 1995a).

Private Wells

The PSA and Affected Area extend approximately 2.5 miles northwest of the site and include homes and businesses. Based on VWR's investigations, 82 private drinking water wells have been impacted by the contamination. With the exception of five parties, all individuals served by these impacted wells have been provided an alternative drinking water source (connections to the United Water Corporation). The impacted wells are not closed and may still be used for other purposes.

The wells within a 4-mile radius of the site and their respective populations are presented in Table 4-1.

Table 4-1—Estimated Populations Using Drinking Water Wells Within a Four-Mile Radius

Radial Distance from Site (miles)	Municipal Wells	Population served by Municipal Wells ^a	Private ^b /Community ^c Wells	Population Served by Private ^d /Community Wells ^c	Cumulative Population
0 to 1/4	0	0	1	2	3
>1/4 to 1/2	1	2,338	16	10 (30)	2,351
>1/2 to 1	4	4,747	16	0 (40)	7,098

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Table 4-1—Estimated Populations Using Drinking Water Wells Within a Four-Mile Radius

Radial Distance from Site (miles)	Municipal Wells	Population served by Municipal Wells ^a	Private ^b /Community ^c Wells	Population Served by Private ^d /Community Wells ^c	Cumulative Population
>1 to 2	17	20,940	34	0 (192)	28,148
>2 to 3	30	44,046	16	0 (40)	72,194
>3 to 4	21	35,638	NA	NA	107,832
Total	73	107,709	82	12 (302)	107,832

^a For blended water systems, total population is apportioned equally per well (only wells within 4 miles are included).

^b Based on wells identified within the PSA and Affected Area.

^c The Syringa Mobile Park Well (served 110 people)

^d Based upon 1990 Census from EPA GIS database: 2.5 persons per household.

NA Data not available

() Populations associated with contaminated wells, currently using alternative drinking water source.

4.2.2 Surface Water Pathway

The surface water pathway consists of two migration components: the overland flow component and the groundwater discharge to surface water component. Each component is evaluated below for potential impact to drinking water supplies, the human food chain, and environmental receptors.

4.2.2.1 Overland Flow Pathway

The overland flow pathway includes the transport of contaminants by stormwater and floods.

The VWR site was in an area that gently sloped to the northwest prior to development of the mall. The area is now covered by an asphalt parking lot. Various catch basins installed in the parking lot divert stormwater to the Ridenbaugh Canal. Due to the presence of the asphalt pavement and catch basins, very little stormwater is expected to come in contact with the contaminated soil. Any rainwater that infiltrates the asphalt would be expected to also infiltrate the soil and become incorporated with groundwater beneath the site.

Because the contaminated soil is essentially contained beneath the asphalt parking lot, the likelihood of source contaminants contacting and being transport by stormwater or floods is low.

No PCE was detected in samples collected in Ridenbaugh Canal during the PA.

4.2.2.2 Groundwater Discharges to Surface Water Pathway

Based on detections of PCE in Finch Drain, groundwater from the site is assumed to discharge to this nearby surface water body. Although Ridenbaugh Canal is downgradient of the site and could receive groundwater discharges, no PCE has been detected, possibly due to the fact that a portion of the canal is lined, or because the canal may have been constructed above the water table. Finch Drain, on the other hand, was constructed beneath the water table to be recharged partially by groundwater for irrigation purposes (Howarth, 1995).

The probable point of entry (PPE) into Finch Drain by groundwater beneath the site is near Emerald Street, approximately 0.85 mile to the northwest. The 15-mile target distance limit (TDL) for this pathway remains in Finch Drain and its laterals. Concentrations of PCE ranging from 1.0 to 4.8 µg/L were detected during the PA along the first 1.35 miles of the TDL. The contamination is attributed to both contaminated groundwater discharges and discharges of treated groundwater from the air stripper system at the Westpark Mall.

The Nampa-Meridian Irrigation Corporation (NMIC), which owns Finch Drain, reports that the canal is solely used for irrigation purposes.

Drinking Water

No drinking water intakes are reported by NMIC along the 15-mile TDL projected for this site.

Food Chain

No fisheries have been reported by NMIC for the Finch Drain.

Environmental

No wetlands are identified by U.S. Department of Fish and Wildlife wetlands maps within the 1.35 miles of the TDL in which PCE has been detected. On average, 0.88 mile of wetland occurs in the remaining portion of the TDL (PRC, 1993b).

4.2.3 Soil Exposure Pathway

The contaminated soil is covered by the asphalt parking lot and Pier 1 building.

There are no residences within 200 feet of the site. An estimated 25 people work at the Pier 1 store.

The estimated population of nearby residents living within four miles from the site is presented in Table 4-2.

Table 4-2—Estimated Populations within a Four-Mile Radius of Site

Radial Distance From Site (miles)	Estimated Population from Site	Cumulative Population
On-site	25	25
0 to 1/8	1	26
>1/8 to 1/4	11	37
>1/4 to 1/2	452	489
>1/2 to 1	7083	7572
>1 to 2	25078	32650
>2 to 3	36470	69120
>3 to 4	50385	119505

Source: 1990 Census Data presented by 1995 EPA GIS database.

4.2.4 Air Pathway

The presence of the asphalt pavement is anticipated to inhibit migration of gas and particulate contaminants from the site. The most recent observations of the parking lot were done during the PA in 1993, which reported the asphalt to be in excellent condition. Contaminant migration via the air pathway is also anticipated to be inhibited by the presence of the soil vapor extraction system.

Estimates for nearby populations are presented in Table 4-2.

Based upon a partial wetlands map from the U.S. Department of Fish and Wildlife, approximately 200 acres of wetlands are assumed to occur within a 4-mile radius of the site (PRC, 1993b).

According to the Idaho Conservation Data Center, the Boise River three miles north of the site is a wintering area for the American bald eagle, a threatened species. Also, the peregrine falcon, an endangered species, was last observed in 1989 in downtown Boise, 3 to 4 miles from the site. No known aerie (habitat) exists in the 4-mile radius.

SECTION 5

CONCLUSIONS

The groundwater pathway is the most significant pathway for this site due to the public and private wells subject to actual contamination. The presence of a continuous aquitard has not been confirmed. The former public water supply and two private wells are reported to be screened in the deep aquifer—the same aquifer that is used by several municipal systems. To date, PCE has not been detected in the closest municipal water system. Usage for all but five of the 82 PCE-impacted wells have been replaced by connections to the city water supply. None of the impacted wells have been decommissioned. Efforts are currently underway to implement groundwater extraction systems at the site and in the Affected Area.

The potential for surface water migration via overland flow is low because the contaminated soil is covered by the asphalt pavement and a building, which prevent contact with storm or flood water.

Contaminant migration via groundwater discharges to surface water has been observed; samples collected from Finch Drain during the PA indicated concentrations of PCE ranging from 1 to 4.8 µg/L. These concentrations are attributed to contaminated groundwater seepage and the discharge of treated groundwater from the Westpark Mall treatment system. The system is designed to reduce concentrations of PCE in groundwater to 10 µg/L or less. The Finch Drain is used solely for irrigation purposes. No receptors are identified within the 1.35-mile segment of the canal in which PCE was detected.

The potential for soil exposure is extremely low for this site due to the presence of the parking lot and building over the contaminated soil.

The potential for contaminant migration via the air pathway is low due to: a) the presence of the parking lot and building that mitigate particulate migration from the source, and b) the presence of the soil vapor extraction system, which reroutes contaminated vapors through a treatment system to minimize the quantity of volatiles released to the atmosphere.

SECTION 6

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APPENDIX A

BALI HAI WELL MONITORING DATA



IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

1445 North Orchard, Boise, ID 83706-2239, (208) 334-0550

Philip E. Batt, Governor

June 7, 1995

Ruth Lopez
Weston
700 Fifth Avenue, Suite 5700
Seattle, Washington 98104-7600

RE: Public Information Request:

Dear Ms. Lopez:

Enclosed for your use is the information on the Bali Hai Well that you requested by fax on 6-6-95. If you have additional questions, please feel free to call me at 334-0550.

Sincerely,

Jon Wroten
Senior Water Quality Analyst

Attachments

cc: Michael A. Smith, Spvr of Prevention & Certification, SWIRO

RECEIVED

JUN 09 1995

ROY F. WESTON, INC.
SEATTLE OPERATIONS

-HIBBS-
ANALYTICAL LABORATORIES, INC.
1804 N. 33rd Street, Boise
Boise, Idaho 83703
Phone # (208) 342-5515

CC: File
RECEIVED

SEP 16 1994

LABORATORY ANALYSIS REPORT
SAMPLE NUMBER - 9420683

DIVISION OF
ENVIRONMENTAL QUALITY
SWIRO

Attn. LEROY PALMER

BOISE WATER CORPORATION
PO BOX 7488
BOISE, ID 83707

Time of Collection: COMP
Date of Collection: 08/16/94

Date Received: 08/16/94
Date Reported: 09/08/94

Submitted by:

Source of Sample: LOGGER, OVERLAND, RIVER RUN, BALI HAI WELL COMP

Test Requested	FRDS #	MCL	Analysis Result Unit	MDL	Method	Date Completed	Analyst Initials
1,1-DICHLOROETHYLENE	2977	7.0	<0.5 ug/L	0.07	EPA 502.2	08/19/94	DMB
1,1,1-TRICHLOROETHANE	2981	200	<0.5 ug/L	0.03	EPA 502.2	08/19/94	DMB
1,1,2-TRICHLOROETHANE	2985	5.0	<0.5 ug/L	0.05	EPA 502.2	08/19/94	DMB
1,2-DICHLOROETHANE	2980	5.0	<0.5 ug/L	0.03	EPA 502.2	08/19/94	DMB
1,2-DICHLOROPROPANE	2983	5.0	<0.5 ug/L	0.006	EPA 502.2	08/19/94	DMB
1,2,4-TRICHLOROBENZENE	2378	70.0	<0.5 ug/L	0.03	EPA 502.2	08/19/94	DMB
BENZENE	2990	5.0	<0.5 ug/L	0.009	EPA 502.2	08/19/94	DMB
CARBON TETRACHLORIDE	2982	5.0	<0.5 ug/L	0.01	EPA 502.2	08/19/94	DMB
CIS-1,2-DICHLOROETHYLENE	2380	70.0	<0.5 ug/L	0.01	EPA 502.2	08/19/94	DMB
DICHLOROMETHANE	2964	5.0	<0.5 ug/L	0.02	EPA 502.2	08/19/94	DMB
ETHYLBENZENE	2992	700	<0.5 ug/L	0.005	EPA 502.2	08/19/94	DMB
MONOCHLOROBENZENE	2989	100	<0.5 ug/L	0.003	EPA 502.2	08/19/94	DMB
O-DICHLOROBENZENE	2968	600	<0.5 ug/L	0.05	EPA 502.2	08/19/94	DMB
P-DICHLOROBENZENE	2969	75	<0.5 ug/L	0.007	EPA 502.2	08/19/94	DMB
STYRENE	2996	100	<0.5 ug/L	0.01	EPA 502.2	08/19/94	DMB
TETRACHLOROETHENE	2987	5.0	<0.5 ug/L	0.04	EPA 502.2	08/19/94	DMB
TOLUENE	2991	1x10 3	<0.5 ug/L	0.01	EPA 502.2	08/19/94	DMB
TOTAL XYLENES	2955	1x10 4	<0.5 ug/L	0.02	EPA 502.2	08/19/94	DMB
TRANS-1,2-DICHLOROETHYLENE	2979	100	<0.5 ug/L	0.06	EPA 502.2	08/19/94	DMB
TRICHLOROETHENE	2984	5.0	<0.5 ug/L	0.01	EPA 502.2	08/19/94	DMB
VINYL CHLORIDE	2976	2.0	<0.5 ug/L	0.02	EPA 502.2	08/19/94	DMB
1,1-DICHLOROETHANE	2978	UR	<0.5 ug/L	0.07	EPA 502.2	08/19/94	DMB
1,1-DICHLOROPROPENE	2410	UR	<0.5 ug/L	0.02	EPA 502.2	08/19/94	DMB
1,1,1,2-TETRACHLOROETHANE	2986	UR	<0.5 ug/L	0.005	EPA 502.2	08/19/94	DMB
1,1,2,2-TETRACHLOROETHANE	2988	UR	<0.5 ug/L	0.01	EPA 502.2	08/19/94	DMB
1,2,3-TRICHLOROPROPANE	2414	UR	<0.5 ug/L	0.4	EPA 502.2	08/19/94	DMB
1,3-DICHLOROPROPANE	2412	UR	<0.5 ug/L	0.03	EPA 502.2	08/19/94	DMB
1,3-DICHLOROPROPENE	2413	UR	<0.5 ug/L	0.06	EPA 502.2	08/19/94	DMB
2,2-DICHLOROPROPANE	2416	UR	<0.5 ug/L	0.05	EPA 502.2	08/19/94	DMB
BROMOBENZENE	2993	UR	<0.5 ug/L	0.006	EPA 502.2	08/19/94	DMB
BROMODICHLOROMETHANE	2943	UR	<0.5 ug/L	0.02	EPA 502.2	08/19/94	DMB
BROMOFORM	2942	UR	<0.5 ug/L	0.5	EPA 502.2	08/19/94	DMB
BROMOMETHANE	2214	UR	<0.5 ug/L	1.1	EPA 502.2	08/19/94	DMB
CHLOROETHANE	2216	UR	<0.5 ug/L	0.10	EPA 502.2	08/19/94	DMB
CHLOROFORM	2941	UR	<0.5 ug/L	0.02	EPA 502.2	08/19/94	DMB
CHLOROMETHANE	2210	UR	<0.5 ug/L	0.03	EPA 502.2	08/19/94	DMB
DIBROMOCHLOROMETHANE	2944	UR	<0.5 ug/L	0.33	EPA 502.2	08/19/94	DMB
DIBROMOMETHANE	2408	UR	<0.5 ug/L	2.2	EPA 502.2	08/19/94	DMB
M-DICHLOROBENZENE	2967	UR	<0.5 ug/L	0.07	EPA 502.2	08/19/94	DMB

Test Requested	FRDS #	MCL	Analysis Result Unit	MDL	Method	Date Completed	Analyst Initials
O-CHLOROTOLUENE	2965	UR	<0.5 ug/L	0.03	EPA 502.2	08/19/94	DHB
P-CHLOROTOLUENE	2966	UR	<0.5 ug/L	0.02	EPA 502.2	08/19/94	DHB

-HIBBS-
ANALYTICAL LABORATORIES, INC.
1804 N. 33rd Street, Boise
Boise, Idaho 83703
Phone # (208) 342-5515

JW
CC: File 1
Dottie

LABORATORY ANALYSIS REPORT
SAMPLE NUMBER - 9420678

Attn. LEROY PALMER

P.O.# 2548

BOISE WATER CORPORATION
PO BOX 7488
BOISE, ID 83707

Time of Collection: 12:10
Date of Collection: 08/16/94

Date Received: 08/16/94
Date Reported: 09/19/94

RECEIVED

Submitted by:

Source of Sample: BALI HAI WELL

SEP 29 1994

Lab Comment: ATL = ANALYSIS PERFORMED BY ANATEX LABS.
(Results Received: 09/19/94)

DIVISION OF
ENVIRONMENTAL QUALITY
SWIRC

Test Requested	FRDS #	MCL	Analysis Result Unit	MDL	Method	Date Completed	Analyst Initials
2,4-D	2105	70.0	<1.0 ug/L	1.0	EPA 515.1	09/09/94	CBO
2,4,5-TP SILVEX	2110	50.0	<0.2 ug/L	0.2	EPA 515.1	09/09/94	CBO
ADIPATES	2035	400	<50.0 ug/L	50.0	EPA 525.1	08/22/94	BDG
ALACHLOR (LASSO)	2051	2.0	<0.20 ug/L	0.2	EPA 507	08/22/94	BDG
ATRAZINE	2050	3.0	<0.1 ug/L	0.1	EPA 507	08/22/94	BDG
BENZO(A)PYRENE	2306	0.2	<0.02 ug/L	0.02	EPA 550.1	09/08/94	CBO
LINDANE	2010	0.2	<0.02 ug/L	0.02	EPA 508	09/08/94	BDG
CARBOFURAN	2046	40.0	<1.0 ug/L	1.0	EPA 531.1	09/02/94	CBO
CHLORDANE	2959	2.0	<0.40 ug/L	0.40	EPA 508	09/08/94	BDG
DALAPON	2031	200	<4.0 ug/L	4.0	EPA 515.1	09/09/94	CBO
DIBROMOCHLOROPROPANE	2931	0.2	<0.02 ug/L	0.02	EPA 504	08/23/94	BDG
DINOSEB	2041	7.0	<0.2 ug/L	0.2	EPA 515.1	09/09/94	CBO
DIGUAT	2032	20.0	<8.0 ug/L	8.0	EPA 549	08/29/94	ATL
ENDOTHALL	2033	100	<20.0 ug/L	20	EPA 548	08/25/94	BDG
ENDRIN	2005	0.2	<0.02 ug/L	0.02	EPA 508	09/08/94	BDG
ETHYLENE DIBROMIDE (EDB)	2946	0.05	<0.01 ug/L	0.01	EPA 504	08/23/94	BDG
GLYPHOSATE	2034	709	<17 ug/L	17	EPA 547	08/30/94	CBO
HEPTACHLOR EPOXIDE	2067	0.20	<0.02 ug/L	0.02	EPA 508	09/08/94	BDG
HEPTACHLOR	2065	0.40	<0.04 ug/L	0.04	EPA 508	09/08/94	BDG
HEXACHLOROBENZENE (HCB)	2274	1.00	<0.10 ug/L	0.10	EPA 508	09/08/94	BDG
HEXACHLOROCYCLOPENTADIENE	2042	50.0	<5.0 ug/L	5.0	EPA 508	09/08/94	BDG
METHOXYCHLOR	2015	40.0	<4.0 ug/L	4.0	EPA 508	09/08/94	BDG
PENTACHLOROPHENOL	2326	1.00	<0.1 ug/L	0.1	EPA 515.1	09/09/94	CBO
PHTHALATES	2039	6.0	<3.0 mg/L	3.0	EPA 504	09/08/94	BDG
PICLORAM	2040	500	<0.2 ug/L	0.2	EPA 515.1	09/02/94	CBO
POLYCHLORINATED BIPHENYLS	2883	0.50	<0.5 ug/L	0.25	EPA 508	09/08/94	BDG
SIMAZINE	2037	4.0	<0.1 ug/L	0.1	EPA 507	08/22/94	BDG
TOXAPHENE	2020	3.0	<1.0 ug/L	1.0	EPA 508	09/08/94	BDG
OXAMYL	2036	200	<1.3 ug/L	1.3	EPA 531.1	09/02/94	CBO
3-HYDROXYCARBOFURAN	2066	UR	<1.5 ug/L	1.5	EPA 531.1	09/02/94	CBO
ALDICARB	2047	6.0	<1.5 ug/L	1.5	EPA 531.1	09/02/94	CBO
ALDICARB SULFOXIDE	2043	6.0	<1.5 ug/L	1.5	EPA 531.1	09/02/94	CBO
ALDICARB SULFONE	2044	6.0	<1.6 ug/L	1.6	EPA 531.1	09/02/94	CBO
ALDRIN	2356	UR	<0.10 ug/L	0.1	EPA 508	09/08/94	BDG

(continued)

Test Requested	FRDS #	MCL	Analysis Result Unit	MDL	Method	Date Completed	Analyst Initials
BUTACHLOR	2076	UR	<0.4 ug/L	0.4	EPA 507	08/22/94	BDG
CARBARYL	2021	UR	<1.6 ug/L	1.6	EPA 531.1	09/02/94	CBO
DICAMBA	2440	UR	<0.5 ug/L	0.20	EPA 515.1	09/09/94	CBO
DIELDRIN	2070	UR	<0.10 ug/L	0.10	EPA 508	09/08/94	BDG
METHOMYL	2022	UR	<1.0 ug/L	1.0	EPA 531.1	09/02/94	CBO
METOLACHLOR	2045	UR	<0.4 ug/L	0.8	EPA 507	08/22/94	BDG
METRIBUZIN	2595	UR	<0.4 ug/L	0.4	EPA 507	08/22/94	BDG
PROPACHLOR	2077	UR	<0.5 ug/L	0.5	EPA 507	08/22/94	BDG

Cher H. C. Smith

For
RECEIVED

-HIBBS-
ANALYTICAL LABORATORIES, INC.
 1804 N. 33rd Street, Boise
 Boise, Idaho 83703
 Phone # (208) 342-5515

JUL 22 1993

DIVISION OF
 ENVIRONMENTAL QUALITY
 SWIRO

LABORATORY ANALYSIS REPORT
 SAMPLE NUMBER - 9313408

Attn. LEROY PALMER

P.O.# 0001905

**BOISE WATER CORPORATION
 P O BOX 7488
 BOISE, ID 83707**

Time of Collection:
 Date of Collection: **06/22/93**

Date Received: **06/23/93**
 Date Reported: **07/19/93**

Submitted by:

PWS: 4010016

Source of Sample: **BALI HAI**

Lab Comment:

REGULATED VOCS:

VINYL CHLORIDE	<0.5	ug/L
BENZENE	<0.5	ug/L
CARBON TETRACHLORIDE	<0.5	ug/L
1,2-DICHLOROETHANE	<0.5	ug/L
TRICHLOROETHENE	<0.5	ug/L
1,4-DICHLOROBENZENE	<0.5	ug/L
1,1-DICHLOROETHENE	<0.5	ug/L
1,1,1-TRICHLOROETHANE	<0.5	ug/L

NEW REGULATED VOCS:

CIS-1,2-DICHLOROETHENE	<0.5	ug/L
1,2-DICHLOROPROPANE	<0.5	ug/L
ETHYLBENZENE	<0.5	ug/L
MONOCHLOROBENZENE	<0.5	ug/L
1,2-DICHLOROBENZENE	<0.5	ug/L
STYRENE	<0.5	ug/L
TETRACHLOROETHENE	<0.5	ug/L
TOLUENE	<0.5	ug/L
TRANS-1,2-DICHLOROETHENE	<0.5	ug/L
XYLENES	<0.5	ug/L

UNREGULATED VOCS:

CHLOROFORM	<0.5	ug/L
BROMODICHLOROMETHANE	<0.5	ug/L
DIBROMOCHLOROMETHANE	0.6	ug/L
BROMOFORM	<0.5	ug/L
1,3-DICHLOROBENZENE	<0.5	ug/L
DICHLOROMETHANE	<0.5	ug/L
DIBROMOMETHANE	<0.5	ug/L
1,1-DICHLOROPROPENE	<0.5	ug/L
1,1-DICHLOROETHANE	<0.5	ug/L
1,1,2,2-TETRACHLOROETHANE	<0.5	ug/L
1,3-DICHLOROPROPANE	<0.5	ug/L
CHLOROMETHANE	<0.5	ug/L
BROMOMETHANE	<0.5	ug/L
1,2,3-TRICHLOROPROPANE	<0.5	ug/L
1,1,1,2-TETRACHLOROETHANE	<0.5	ug/L
CHLOROETHANE	<0.5	ug/L
1,1,2-TRICHLOROETHANE	<0.5	ug/L

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DIVISION OF
ENVIRONMENTAL QUALITY
SWIRO

2,2-DICHLOROPROPANE	<0.5	ug/L
2-CHLOROTOLUENE	<0.5	ug/L
4-CHLOROTOLUENE	<0.5	ug/L
BROMOBENZENE	<0.5	ug/L
1,3-DICHLOROPROPENE	<0.5	ug/L
1,2,4-TRICHLOROBENZENE	<0.5	ug/L

Test Requested	State Code	MCL	Analysis Result-----Unit	MDL	Method	Date Analyzed	Analyst Initials
VOC			* ug/L		EPA 502.2	06/28/93	DMB

